

their function being apparently largely the guarding of the royal pair.

The smallest American species of *Amitermes*, very similar to *A. coachellæ* in type of soldier mandibles but very much smaller than that species, was described by me (Light 1930) under the name *A. wheeleri* Desneux on the basis of determinations by Banks (1920). Recent studies of Banks' material and one of Desneux's cotypes leave little doubt that it is an undescribed species quite different from Desneux's species which is probably the *Amitermes californicus* of Banks (1920). This species will be named and the hitherto unknown alates described in a forthcoming revision of the genus. Until such time it seems convenient to retain the older name. This species was taken but once in Nevada, on a down fence post partly buried in sand near the Winterwood Ranch.

Amitermes californicus Banks is probably a synonym of *A. wheeleri* Desneux as pointed out above, but pending final investigation of type material Banks' name may be retained. This species was not found in Las Vegas or vicinity but was very abundant in a dryer, more gravelly wash emptying into the Vegas Wash at an elevation of about 800-900 feet. Late reproductive nymphs were present but no alates.

PRELIMINARY NOTE ON PÆDOGENESIS IN A CECIDOMYIID

BY F. D. KLYVER

San Mateo Junior College, San Mateo, California

The writer's attention was attracted to an abundant infestation of *Lupinus nanus* by an undetermined cecidomyiid near South San Francisco in March, 1931. Most of the lupine plants extending over a considerable area had several to many of their leaves distorted to form simple leaf-galls. These were formed by the margins of the opposite sides of a leaflet remaining firmly in contact, frequently along their entire length, the blade of the leaflet then expanding to form a bluntly pointed spindle-shaped gall, which turned pale yellow and translucent.

Several hundred heavily infested leaves were taken to the laboratory and placed loosely in covered containers for observation on March 19 (Lot A). A second lot (Lot B) was obtained

on March 21 and a third (Lot C) on April 1. A daily record of the adult emergents was kept for each of these lots, while from time to time a number of galls were opened for observations on the eggs, larvæ and pupæ.

Following is a summary of the pertinent data relating to (1) the time of emergence, (2) the total number of adults, (3) the sex ratios, for Lots A, B, and C respectively.

(1) The first emergences occurred during the third, second and first days after the material was brought into the laboratory, in sex ratios (males to females) approximating 2:3, 5:0, and 6:5.

(2) The daily maximum number of emergences occurred during the eleventh, eighth, and sixth days, in ratios approximating 1:2, 5:8, and 2:1.

(3) The total number of emergences was 1980, 813, and 324, in the ratios 644:1336, 296:517, and 202:122 respectively.

Shortly after the material of each lot was brought into the laboratory many of the larvæ left the galls and moved about freely in the containers, pupating there later. The greater number, however, remained in the galls until shortly before pupation or after. The detailed observations made on the eggs, larvæ and pupæ were confined largely to those that thus remained in the galls. The following processes, enumerated here without details, were observed:

(1) Viviparous parthenogenetic pædogenesis, in which larvæ produced similar active larvæ.

(2) Oviparous parthenogenetic pædogenesis, in which the larva or pupa produced a single egg, found within the silken cocoon with the quiescent pupa in a number of cases.

(3) Pupation without the formation of a cocoon.

(4) Pupation in which a silken cocoon was formed.

(5) Copulation of the adults.

It would appear that several rare phenomena were observed in this material. The occurrence of pupal oviparous pædogenesis is, in any case, of extraordinary interest inasmuch as it apparently has been reported only twice, at the time of its discovery by Grimm in 1870 in the Chironomid *Tanytarsus* and later by Zavrel. It is hoped that these phenomena may be given more detailed study when sufficient material again becomes available.